

## **Historic, Archive Document**

Do not assume content reflects current  
scientific knowledge, policies, or practices.



A335  
R882K

UNITED STATES  
DEPARTMENT OF AGRICULTURE  
LIBRARY

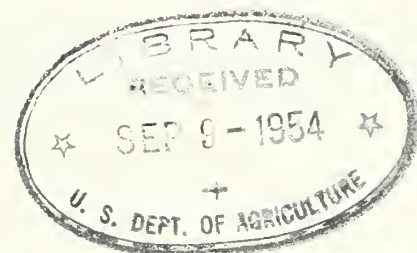


BOOK NUMBER  
873065

A335  
R882K

K A N S A S 5 1 W I C H I T A

FIELD APPRAISAL ANALYSIS



---

Prepared by  
Power Requirements Section  
Electric Operations and Loans Division  
RURAL ELECTRIFICATION ADMINISTRATION

---

Field Appraisal  
Completed in  
April 1954

\*\*\*\*\*  
\*\*  
\*

U

Power Requirements Section  
Electric Operations and Loans Division

June 28, 1954

SUMMARY AND CONCLUSION  
KANSAS 51 WICHITA

878073

AREA CHARACTERISTICS

With the exception of the period between 1930 and 1940, the population of the area has continued to increase from 1920 to the present. The trend in number of farms, on the other hand, has been downward since 1930. The average value of farm land and buildings was \$75,790 per farm in 1950 and gross farm income from sale of farm products averaged \$14,911 in 1949. Average farm property value in the area was over three times the State average and average farm income was over two and one-half times the State average farm income. Both the average farm property valuation and average farm income increased at greater rates for the service area than for the State as a whole between 1940 and 1950. Wheat is the major source of agricultural income in the area. Agriculture accounted for 43 percent of the employed labor force.

The topography of the area ranges from nearly level to gently rolling. Soils are brown, silty and occasionally sandy. The growing season averages 170 days. The area is currently going through a period of drought.

ESTIMATED FUTURE NUMBER OF CONSUMERS

On January 31, 1954, the cooperative was serving 4,607 consumers. The manager has estimated a total of 5,372 consumers to be served by the end of 1963 (Table II). The manager's estimate of farm and town residential consumers appears reasonable.

It is expected that the increases in numbers of nonresidential consumers in the next 10 years will occur in the small commercial and irrigation classes. The estimated increases provided by the manager appear to be reasonable.

ESTIMATED FUTURE AVERAGE CONSUMPTION OF ELECTRICITY

This cooperative began operation in 1949 with an acquisition of existing facilities. Since 1950 the average monthly farm consumption has increased from 144 kwh to 212 kwh in 1953. Average monthly usage of town residential consumers has increased from 101 kwh in 1950 to 124 kwh in 1953. Served farm consumers indicated their consumption would increase 14 percent and town residential consumers 24 percent during the next 3 years. Use of gas was reported by 33 percent of the farm consumers and by 62 percent of the town residential consumers.

Based on factors believed to be significant, this analysis leads to the following estimates of average kwh consumption which are certified as being reasonable and may be expected to be attained in the years specified:







2-Summary - Kansas 51 Wichita - June 28, 1954

<u>Class of Consumer</u>	<u>Actual 12 Months Ended Feb. 1954</u>	<u>1956</u>	<u>1959</u>	<u>1964</u>
Farm	218	260	300	375
Town Residential	125	150	170	200
Small Commercial	390**	450	500	575
Public Buildings	349**	365	380	410
Irrigation (Annual):				
I Rate (24.3 hp) (42 cons. @)		20,720	20,720	20,720
D Rate (25.8 hp) (122 cons. @)		32,500	32,500	32,500
Grain Elevators (Annual) (75 cons. @)		2,500	2,500	2,500
Street Lights (Annual)		35,000	38,000	40,000

<u>LARGE COMMERCIAL (ANNUAL):</u>	<u>Estimated KW Billing Demand</u>			
Shallow Water Refinery	175-200-270	1,300,000	1,500,000	2,000,000
Shallow Water Refinery	33-40-50	200,000	250,000	300,000
Collingwood Grain Elev. S.C.	35	13,000	13,000	13,000
Collingwood Grain Elev. Leote	39	20,000	20,000	20,000
Plains Utility Co. #1	38	180,000	183,000	188,000
Plains Utility Co. #2	15	70,000	72,000	75,000
Garden City Irrigation Pump	150	550,000	550,000	550,000
Phils Grocery Power #1	3	7,000	7,000	7,000
Phils Grocery Power #2	7	15,000	15,000	15,000
Phils Grocery Lights #3	12	63,000	63,000	63,000
Blackmore Bros. Grocery (Power)	12	37,000	37,000	37,000
Blackmore Bros. Grocery (Lights)	22	50,000	50,000	50,000
City Dairy (Power)	24	47,000	47,000	47,000
K-N Natural Gas Co. (Standby Service)	175	6,000	6,000	6,000
Western Dehy. Co. (Power)	125	78,000	80,000	83,000
Herndon Grocery Co. (Light #1)	16	35,000	35,000	35,000
Herndon Grocery Co. (Light #2)	26	56,000	56,000	56,000
Syracuse Ice Co. (Power)	17	25,000	25,000	25,000

Municipals:

Special Contract 3¢ FA Rate (2 cons. @)	9,000	10,000	12,000
B-1 Rate (3 cons. @)	1,000	1,500	2,000
J - Rate (2 cons. @)	9,000	10,000	12,000
C - Rate (2 cons. @)	3,000	3,500	4,000
B-2 Rate (9 cons. @)	700	800	1,000
B-3 Rate (3 cons. @)	1,600	1,700	1,800
K - Rate (7 cons. @)	43,000	45,000	50,000
C-2 Rate (1 con. @)	300	300	300

\*\* Estimated

(Continued on next page)

THE UNIVERSITY OF CHICAGO  
LIBRARY  
1000 S. MICHIGAN AVE.  
CHICAGO, ILL. 60607

3-Summary - Kansas 51 Wichita - June 28, 1954

<u>LARGE COMMERCIAL (ANNUAL):</u>	<u>Estimated KW Billing Demand</u>	<u>1956</u>	<u>1959</u>	<u>1964</u>
Railroads:				
Special Cont. 6¢ Rate (4 cons.@)		1,000	1,000	1,000
Special Cont. Rate (3 cons. @)		36,000	36,000	36,000
Special Cont. 2½¢ Rate (2 cons.@)		200	200	200
B-1 Rate (3 cons.@)		3,600	3,600	3,600
B - Rate (1 con. @)		800	800	800
B-2 Rate (6 cons.@)		6,300	6,300	6,300
Special R Rate (2 cons.@)		33,000	33,000	33,000
B-8 Rate (1 con. @)		220	220	220
C - Rate (1 con. @)		430	430	430
Other REA Cooperative:				
Kansas 42 Lane	1775-2165-2780	7,000,000	8,550,000	11,000,000

E. R. Brown  
Head, Power Requirements Section  
Electric Operations and Loans Division



June 28, 1954.

Power Requirements Section  
Electric Operations and Loans Division

ANALYSIS OF BASIC FACTORS RELATED TO THE FUTURE  
CONSUMPTION OF ELECTRICITY  
KANSAS 51 WICHITA  
(Reappraisal)1/

This analysis of basic factors related to the future consumption of electricity by consumers of the Wheatland Electric Cooperative, Inc., with headquarters at Scott City, Kansas, is based on a field study conducted by Vergil Bufford, Agricultural Economist during March and April 1954. This analysis was prepared by Joseph C. Podany, Agricultural Economist. The field work consisted primarily of interviews with 29 farm and 66 town residential consumers. In addition, unserved farm families and served and prospective consumers of other classes were interviewed<sup>2/</sup>.

Businessmen, bankers and agricultural leaders were consulted regarding local economic trends and their estimates of the future of the area with respect to electricity. Supporting economic data were obtained from the U. S. Census for Greeley, Hamilton, Scott, and Wichita Counties and from other secondary sources.

ECONOMIC CHARACTERISTICS

The service area is located on the west central border of Kansas and covers all of Greeley and Wichita Counties, the west one-half of Scott County and portions of Hamilton and Kearney Counties.

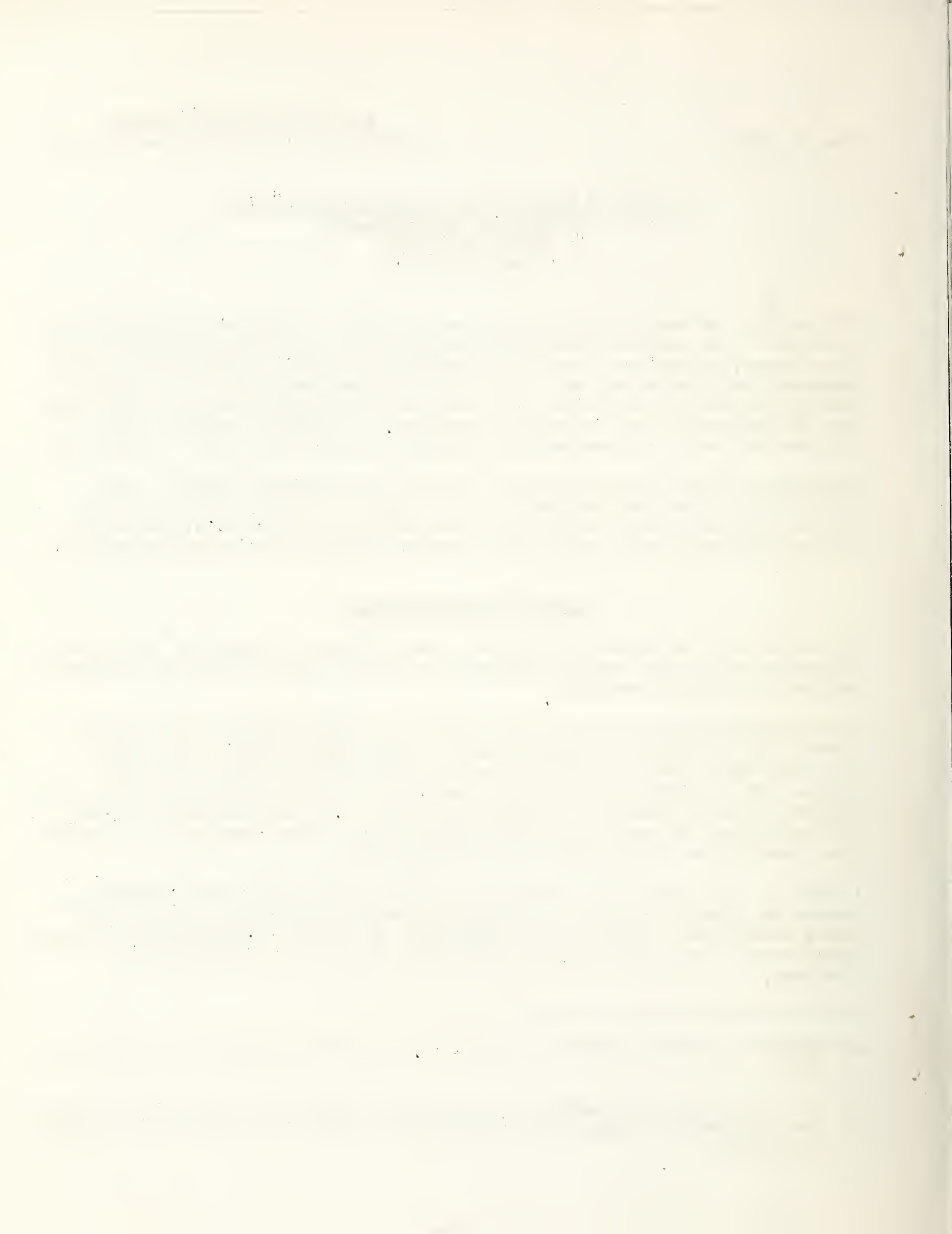
The total population of the area increased between 1920 and 1930 and decreased between 1930 and 1940 and increased again between 1940 and 1950. The trend in area farm numbers on the other hand has been generally downward since 1930. Between 1940 and 1950 farm population decreased 6 percent while the combined rural nonfarm and urban population increased 63 percent. The classification of Scott City was changed to urban in the 1950 census so the actual increase in the population classified as rural nonfarm was but 2 percent.

In 1950 the farm population comprised 35 percent of the total, rural nonfarm 41 percent and urban 24 percent. Agriculture accounted for 43 percent of the employed labor force, wholesale and retail trade 17 percent, transportation 7 percent manufacturing 3 percent, miscellaneous trades, services and professions the remainder.

---

1/ Original appraisal completed in 1947. See appraisal analysis dated April 13, 1947.

2/ Farm consumers were randomly selected on the basis of a 3 percent area sample. Town residential consumers were randomly selected on the basis of a 3 percent list sample.





Kansas 51 Wichita - June 28, 1954

Farms in the area averaged 1,325 acres in 1950. They were valued at \$75,790 per farm or at three times the average State valuation per farm. Average income for all area farms in 1949 was \$14,911, or about two and one-half times the average income per farm for the State as a whole.

About 65 percent of the agricultural income is accounted for by field crops, principally wheat. Next in importance are range cattle and sheep, together, accounting for about one-third of the total farm income. Dairying and poultry account for about 2 percent each. Off-farm employment for 100 days or more in 1949 was reported by 10 percent of the farmers. Full or part ownership of farms was reported by 68 percent of the operators.

Available data indicate a ratio of loans to deposits of 1.0 to 5.4 in 1953 for banks serving the rural areas. The Federal Land Bank at Syracuse was the only agency making loans exclusively to farmers located in the service area. Demand for real estate loans appears to be on the increase.

TABLE I  
ECONOMIC TRENDS RELATED TO THE RATE OF  
INCREASE IN USE OF ELECTRIC POWER

<u>Item and Relationship</u>		<u>Trend</u>			
		<u>Basic Economic Trends</u>			
<u>Population</u>	<u>1920</u>	<u>1930</u>	<u>1940</u>	<u>1950</u>	
Service Area	8,591	11,595	10,241	13,267	
State of Kansas	1,769,257	1,830,999	1,801,028	1,905,299	
Ratio of Area to State	.0048	.0062	.0057	.0070	
<u>Number of Farms</u>	<u>1920</u>	<u>1930</u>	<u>1940</u>	<u>1945</u>	<u>1950</u>
Service Area	1,202	1,574	1,511	1,150	1,288
State of Kansas	165,286	166,042	156,327	141,192	131,394
Ratio of Area to State	.0072	.0095	.0097	.0081	.0098
<u>Average Income From All Farm Products Sold</u>			<u>1939</u>	<u>1944</u>	<u>1949</u>
Service Area			\$1,236	\$10,477	\$14,911
State of Kansas			1,301	4,275	5,820
Ratio of Area to State			.95	2.45	2.56
<u>Average Value of Farm Land and Buildings</u>	<u>1920</u>	<u>1930</u>	<u>1940</u>	<u>1945</u>	<u>1950</u>
Service Area	\$14,743	\$13,687	\$9,248	\$26,239	\$75,790
State of Kansas	17,122	13,738	9,092	13,962	24,756
Ratio of Area to State	.86	1.00	1.02	1.89	3.06
<u>Power Cost and Power Use Trends</u>					
<u>Cost of Purchased Power Per KWH</u>			<u>1950</u>	<u>1951</u>	<u>1952</u>
Kansas 51 Wichita			1.26¢	1.64¢	1.34¢
All Kansas Co-ops			.95¢	.92¢	.85¢
<u>Average Monthly KWH Consumption Per Farm Consumer</u>			<u>1949</u>	<u>1950</u>	<u>1951</u>
Kansas 51 Wichita			134	144	146
All Kansas Co-ops			140	146	163





Kansas 51 Wichita - June 28, 1954

Farm facilities data for 1950 indicate that only 19 percent of the farms had central station electricity and 24 percent had telephones. With respect to electric service, however, the appraiser reports that the system now (1954) has almost achieved complete area coverage.

#### PHYSICAL CHARACTERISTICS

The area is a portion of the Platte-Republican and Upper Arkansas Valley High Plains of western Kansas. The topography ranges from nearly level to gently rolling with some broken lands near the streams. Soils are brown, silty and occasionally sandy.

The average length of growing season is 170 days at Scott City. Average temperatures are approximately 30°F. in January and 78°F. in July. Average annual precipitation is 19 inches at Scott City.

The area is subject to wind erosion and portions of it are now having as severe dust storms as they did in the "dust bowl" days of the 1930's.

#### NATURE OF PRESENT AND INDICATED NUMBER OF CONSUMERS

On January 31, 1954, the cooperative was serving 4,607 consumers. Based on the classifications used by the cooperative in its operating reports, 1,110 were farms, 2,302 town residentials, 761 small commercials, 217 large commercials, 155 irrigation wells, 20 railroads and 7 public street lights. The system also provided service to 32 town utilities and 3 other rural electric cooperatives.

According to the appraiser, the cooperative is close to having complete area coverage; therefore, additional consumers will largely have to be new homes, businesses, irrigation wells or other new units not now in existence.

The number of various classes of consumer units as disclosed by an expansion of the sample data (Table II) is compared with estimates for 1963 provided to REA by the manager of the Wheatland Electric Cooperative, Inc.



TABLE II

DISTRIBUTION OF CONSUMER UNITS WITH  
RESPECT TO ELECTRIC SERVICE

<u>Class</u>	<u>Number in Sample</u>	<u>Expanded Number<sup>a/</sup></u>	<u>Manager's Estimate</u>	<u>Estimated Number</u>
<u>Served</u>				
Farm	29	966	1,110 <sup>b/</sup> d/	1,110 <sup>d/</sup>
Town Residential	66	2,198	2,302 <sup>b/</sup> e/	2,302 <sup>e/</sup>
Small Commercial	--	--	761 <sup>b/</sup> f/	696 <sup>i/</sup>
Large Commercial	--	--	217 <sup>b/</sup> g/	171 <sup>i/</sup>
Elevators	--	--	--	77 <sup>i/</sup> k/
Public Buildings	--	--	--	188 <sup>i/</sup>
Irrigation Wells	--	--	155 <sup>b/</sup>	155 <sup>b/</sup>
Service to Municipalities	--	--	32 <sup>b/</sup> h/	32 <sup>h/</sup>
Other Cooperatives	--	--	3 <sup>b/</sup>	3 <sup>b/</sup>
Street Lights	--	--	7 <sup>b/</sup>	7 <sup>b/</sup>
Railroads	--	--	20 <sup>b/</sup>	20 <sup>b/</sup>
<u>Potential</u>				
Farm	1	33	215 <sup>e/</sup> d/	215 <sup>d/</sup>
Town Residential	--	--	208 <sup>e/</sup> e/	208 <sup>e/</sup>
Small Commercial	--	--	109 <sup>e/</sup> f/	(172
Large Commercial	--	--	63 <sup>e/</sup> g/	(
Irrigation Wells	--	--	170 <sup>e/</sup>	170
Subtotal	96	3,197	5,372	
<u>Other</u>				
Service Run Not Connected	1	33	--	--
Service Retired	2	67	--	--
Vacant	3	100	--	--
Abandoned	1	33	--	--
Total Units	103	3,430	5,372	
Total Estimated Ultimate Consumers of Electricity				5,372

<sup>a/</sup> Derived by expanding sample data by reciprocal of sampling rate.

<sup>b/</sup> January 1954 operating report.

<sup>c/</sup> Manager's letter to REA dated April 9, 1954. 1963 estimate number less number reported on January operating report.

<sup>d/</sup> Farm classification also includes residential service in villages and town residents outside of corporate limits of town.

<sup>e/</sup> Town residents limited to residents within corporate limits of towns.

<sup>f/</sup> Includes public buildings.

<sup>g/</sup> Includes elevators, other small commercial and large power.

<sup>h/</sup> Lighting for city buildings and power for pumping water.

<sup>i/</sup> Determined by actual count of users listed on work sheets.

<sup>k/</sup> Includes two elevator loads for which kwh estimates provided separately.





ANALYSIS REGARDING FUTURE NUMBER OF CONSUMERS

This cooperative's farm consumer class as reported on its monthly operating report includes residential service in villages and town residential users who are located outside of the corporate limits of towns, as well as farm consumers. The town residential class includes only those users residing within the corporate limits of towns. An evaluation of the manager's estimate of the number of consumers to be served within 10 years in each of the above classes is difficult. An expansion of the sample data (Table II) indicates a much smaller number of farm consumers both in present numbers and in potentials. However, such sample data take into account only farm and nonfarm residents outside of villages and towns. Trends in numbers of farms would indicate a very slight increase in future numbers in farm consumers. On the other hand, trends in number of nonfarm housing units over the past 10 years would indicate a much higher increase in town consumers over the next 10 years than estimated by the manager. If the difference in classification is taken into account, it appears that the manager's estimates of future number of farm and town residential consumers taken together is reasonable.

The manager's estimates of the numbers of other consumer classes to be served within the next 10 years appear to be extensions of estimates of consumer numbers prepared in connection with a power requirements study of the cooperative by REA in November 1952.

According to the manager, the cooperative expects to serve in the next 10 years a total of 870 small commercial consumers (including public buildings), 230 large commercials (including elevators and large power), 7 street lights, 20 railroads, 325 irrigation wells, 32 services to municipalities and services to 3 other rural electric cooperatives.

The manager expects the number of small commercials to increase by 109, the number of large commercials by 63 and the number of irrigation wells by 170 in the next 10 years. No changes in numbers are expected for the other consumer groups.

A study of the individual consumer accounts for the year 1953 disclosed 696 consumers which could more appropriately be classed as small commercials, 17 as large commercials, 77 as elevators, 188 as public buildings and 166 as irrigation wells.

Based on the classifications used in this analysis, it is estimated that there will be increases of 172 small commercial consumers and of 170 irrigation consumers. These totals agree with the manager's estimate of total nonresidential consumer numbers and assume no increases in public buildings or large commercial consumers.

NATURE OF PRESENT AND INDICATED FUTURE  
AVERAGE KWH CONSUMPTION

A tabulation of the raw data secured from respondents revealed the monthly consumption figures as shown in the following table:





TABLE III  
INDICATED MONTHLY KWH CONSUMPTION<sup>a/</sup>

Consumer Class	Present	Future <sup>b/</sup>	Percent Increase
Farm	219	249	14
Town Residential	144	179	24

a/ Based on indications of served respondents in the survey and average energy requirements as determined by REA for the country at large.

b/ Based on what respondents expect to add in 3 years.

The sample group of farm consumers were actually averaging 276 kwh per month during 1953, while the town residential respondents averaged 138 kwh. Thus, it appears that farm consumers in the area use 126 percent of the average usage of appliances as determined by REA for the country at large; town residential consumers are using 96 percent of this average.

Historical consumption records for farm and town residential consumers in the survey are available only since 1949. However, these records do indicate a generally rising average consumption. The consumption of farm consumers sampled rose from 147 kwh in 1950 to 276 kwh in 1953, with most of the respondents first receiving service in 1950. The consumption of town residential consumers included in the sample rose from 114 kwh in 1950 to 138 kwh in 1953, with the bulk of this class of consumers already receiving service at the time of the acquisition and subsequent energization of the cooperative.

A saturation of electrical appliances and equipment measured in terms of the percent of consumers presently having them and a corresponding percent anticipated in the future was compiled from field schedules. The difference in saturation was converted to indicate future kwh requirements per 100 consumers for each appliance and piece of equipment on the basis of average energy requirements as determined by REA. This tabulation is shown in Table IV.



TABLE IV

PRESENT AND INDICATED SATURATION OF ELECTRICAL  
APPLIANCES AND EQUIPMENT AND CORRESPONDING  
INDICATED INCREASE IN KWH USAGE FARM AND  
TOWN RESIDENTIAL CONSUMERS, COMBINED

Appliance or Equipment	Farm				Town Residential			
	% of Consumers <sup>a</sup>		Increase <sup>b</sup>		% of Consumers <sup>a</sup>		Increase <sup>b</sup>	
	:Indi-	:	:	:	:Indi-	:	:	:
	Pres-:cating:Percon-:	ently:Future: tage : KWH	Using: Use :Points:Usage		Pres-:cating:Percon-:	ently:Future: tage : KWH	Using: Use :Points:Usage	
Air Conditioning Unit	--	--	--	--	3	8	5	10,000
Air Compressor	24	27	3	105	3	3	--	--
Battery Charger	10	10	--	--	2	2	--	--
Blanket	10	10	--	--	6	6	--	--
Blower (Rough)	3	3	--	--	--	--	--	--
Broiler	--	--	--	--	2	2	--	--
Brooder (Hoyer)	14	17	3	498	--	--	--	--
" (Lamb)	3	3	--	--	--	--	--	--
Clock	62	65	3	54	44	44	--	--
Clothes Dryer	3	3	--	--	5	7	2	1,400
Coal Stoker	3	3	--	--	--	--	--	--
Cream Separator	21	21	--	--	--	--	--	--
Dishwasher	--	--	--	--	3	3	--	--
Drill Press	55	55	--	--	8	8	--	--
Elevator (Grain)	7	7	--	--	--	--	--	--
Evaporative Cooler	24	27	3	216	35	39	4	288
Fan (Cent. Hot Air Cir.)	10	10	--	--	14	14	--	--
" (Household)	34	34	--	--	32	35	3	45
Fence	3	6	3	150	--	--	--	--
Food Mixer	72	72	--	--	45	48	3	75
Freezer (Home)	62	76	14	12,600	18	26	8	7,200
Garden Watering	31	31	--	--	3	3	--	--
Heating Pad	28	28	--	--	33	33	--	--
Hot Plate	10	10	--	--	3	3	--	--
Iron	93	96	3	300	94	94	--	--
Ironer	24	24	--	--	6	6	--	--
Lathe	--	--	--	--	3	3	--	--
Lighting:								
Beef Cattle Barn	--	3	3	36	--	--	--	--
Garage	31	34	3	24	27	29	2	16
General Barn	52	59	7	168	2	2	--	--
Grain & Feed Storage Bldg.	31	31	--	--	--	--	--	--
House Lighting	100	100	--	--	100	100	--	--
Milk House	3	3	--	--	2	2	--	--



2-Table IV - Kansas 51 Wichita - June 28, 1954

Appliance or Equipment	Farm				Town Residential			
	% of Consumers <sup>a</sup>		Increase <sup>b</sup>		% of Consumers <sup>a</sup>		Increase <sup>b</sup>	
	:Indi-	:	:	:	:Indi-	:	:	:
	Pres-:eating:Percon-:	cntly:Future: tage :	Using: Use :Points:Usage	KWH	Pres-:eating:Percon-:	cntly:Future: tage :	Using: Use :Points:Usage	KWH
Other Buildings	31	31	--	--	5	5	--	--
Poultry Brooder House	28	31	3	15	--	--	--	--
Poultry Laying House	31	41	10	350	3	3	--	--
Shop	52	52	--	--	5	5	--	--
Yard	72	76	4	72	8	10	2	36
Livestock Watering	41	48	7	1,260	--	--	--	--
Milking Machine	7	7	--	--	--	--	--	--
Percolator	55	55	--	--	52	53	1	60
Power Saw	21	21	--	--	3	3	--	--
Pressure System(Less than 22')	7	7	--	--	2	2	--	--
" " (Over 22')	52	59	7	1,680	--	--	--	--
Radio	97	97	--	--	98	98	--	--
Range	10	10	--	--	17	21	4	4,800
Refrigerator	66	69	3	1,080	82	82	--	--
Refrigerator (Walk-in)	3	3	--	--	2	2	--	--
Roaster	7	7	--	--	6	6	--	--
Sewing Machine	62	65	3	30	48	48	--	--
Soldering Iron	3	3	--	--	2	2	--	--
Space Heater (Portable)	7	10	3	210	8	8	--	--
Television Receiver	3	48	45	16,200	--	53	53	19,080
Toaster	86	86	--	--	82	82	--	--
Tool Grinder	59	59	--	--	3	3	--	--
Vacuum Cleaner	83	90	7	140	71	74	3	60
Ventilator (Attic)	--	--	--	--	2	2	--	--
" (Window)	3	3	--	--	3	3	--	--
Waffle Iron	59	62	3	75	55	56	1	25
Washing Machine	93	93	--	--	88	89	1	35
Water Heater with Bath	10	10	--	--	5	5	--	--
Welder	41	41	--	--	2	4	2	150

a/ Based on indications of presently connected consumers.

b/ Based on average energy requirements as determined by REA. Data do not reflect instances where more than one of the same appliance exists per consumer. These cases are rare and do not affect the overall pattern materially.





ANALYSIS REGARDING FUTURE  
AVERAGE MONTHLY KWH CONSUMPTION

Consumption Trends

This system was energized in 1949. Since 1950 average monthly farm consumption has increased from 144 kwh to 212 kwh in 1953. This is an increase of about 23 kwh in average usage for each year. At this rate of increase, average monthly consumption would reach 280 kwh by the end of 1956 for farm consumers. Over the period 1950 to 1953, the number of farm consumers increased 219 percent.

The average monthly town residential consumption increased from 101 kwh in 1950 to 124 kwh in 1953 or an increase of about 8 kwh per year. If usage continued to increase at this rate, average monthly kwh consumption would be 147 by the end of 1956. The number of town residential consumers has increased by 10 percent for the period 1950-1953.

Indicated Consumption

The sample group of served farm consumers indicated a 14 percent increase in average kwh usage within 3 years, while the sample group of town residents indicated a 24 percent increase within a 3-year period.

Applied to the present consumption averages, average monthly consumption within 3 years would be 242 kwh for farm consumers and 154 kwh for town residential consumers. Considering the effects of past and future consumer additions, the survey results and recent consumption trends indicate average monthly consumption by the end of 1956 will be between 242 and 280 kwh for farm consumers and 147 and 154 kwh for town residential consumers.

Other factors that must be considered in arriving at future estimates of electric consumption are: (1) the extent gas usage is likely to continue in the area; (2) the effect of electric rates; (3) economic trends.

Gas Competition

LP gas was used by 75 percent of the farm respondents. An additional 8 percent reported using natural gas. On the other hand, nearly three-fourths of the town residential respondents were using natural gas, while only about 20 percent were using LP gas. The present uses of gas are shown in Table V.





TABLE V

STATUS OF GAS USE, 29 FARM AND 65 TOWN RESIDENTIAL  
RESPONDENTS IN RANDOM SAMPLE SURVEY<sup>a/</sup>

Consumers' Position With Respect to Use of Gas		Number in Survey		Percent of Total	
		<u>Farm</u>	<u>Town Res.</u>	<u>Farm</u>	<u>Town Res.</u>
Not Using and Not Planning to Use		5	3	17	5
Presently Using		24	62	83	95
Number Using for Each Purpose		<u>Farm</u>	<u>Town Res.</u>		
Range		22	55		
Water Heater		17	42		
Refrigerator		10	7		
House Heating		22	51		
Chick Brooder		8	1		
Total		29	65	100	100

<sup>a/</sup> All served respondents indicating status with respect to use of gas.

Rates

The cooperative's present monthly domestic farm and farm home service rate schedule is as follows:

First 50 kwh @ 10¢ per kwh  
Next 50 kwh @ 5.0¢ per kwh  
Next 200 kwh @ 3.0¢ per kwh  
Over 300 kwh @ 2.0¢ per kwh  
Minimum bill \$10.00

With controlled water heater:

From 200 to 500 kwh @ 1.5¢ per kwh  
Next 100 kwh @ 3.0¢ per kwh  
Over 600 kwh @ 2.0¢ per kwh

Section

1. 1/2  
2. 1/2  
3. 1/2

The cooperative's present residential service rate is:

First 25 kwh @ 10¢ per kwh  
 Next 25 kwh @ 8.0¢ per kwh  
 Next 50 kwh @ 6.0¢ per kwh  
 Excess kwh used @ 5.0¢ per kwh  
 Minimum bill \$1.00 at Scott City  
 " " \$1.50 all other communities served

With electric refrigeration, water heating or electric range:

25-100 kwh @ 4.0¢ per kwh  
 Excess kwh @ 3.0¢ per kwh  
 Minimum monthly charge \$2.50

# NATURE OF FUTURE FARM AND RESIDENTIAL CONSUMPTION

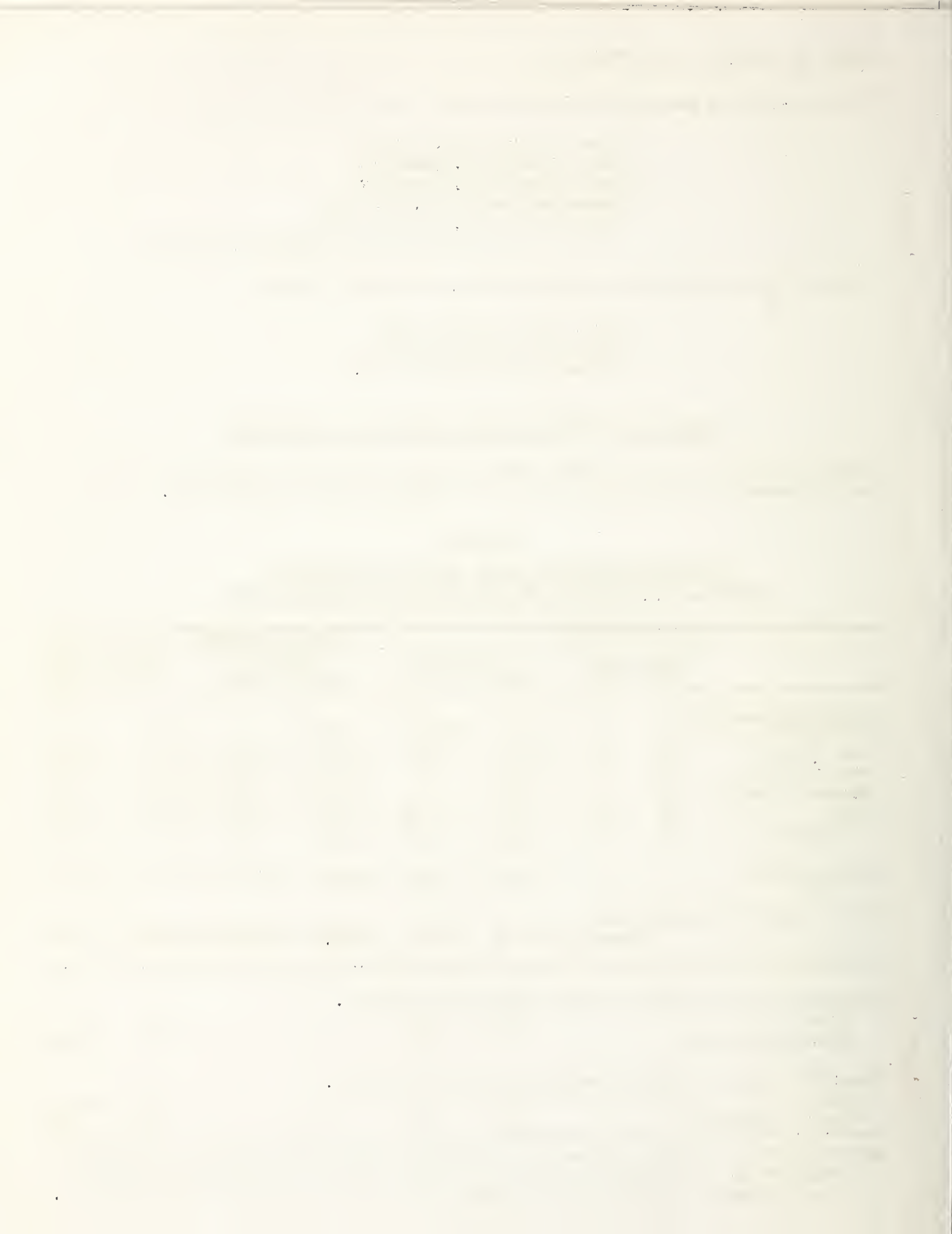
Indicated kwh increases and total usage for major uses of all consumers in the specific area to be achieved by the end of 1956 are shown in Table VI.

TABLE VI

## INDICATED KWH USAGE, FARM AND TOWN RESIDENTIAL CONSUMERS BY CHARACTER OF LOAD PER 100 CONSUMERS, 1956

Use	Indicated Future Saturation		Increase		Indicated KWH <sup>a</sup> Present		Future Total	
	Farm	Town	Farm	Town	Farm	Town	Farm	Town
<u>Major Household Use</u>								
Television	48	53	15,714	16,409	1,048	--	16,762	16,409
Home Freezer	76	26	11,349	6,192	57,618	13,932	68,967	20,124
Water Heater	10	5	--	--	29,100	12,900	29,100	12,900
Pressure System	63	2	1,630	--	13,328	310	14,958	310
Range	10	21	--	4,128	11,640	17,544	11,640	21,672
Refrigerator	69	2	1,048	2,580	23,047	2,580	24,095	5,160
Miscellaneous			3,697	7,934	120,847	103,632	124,544	111,616
Total - Annual Usage Per 100 Consumers			33,438	37,243	256,638	150,948	290,066	188,191
<u>Indicated increase (total) annual usage per consumer.</u>								
Farm			334	--			2,900	--
Town Residential			--	372			--	1,882
<u>Indicated increase (total) monthly usage per consumer.</u>								
Farm			28	--			242	--
Town Residential			--	31			--	157

a/ Adjusted to take into account that appliance usage and amount of electricity required is 126 percent of average for United States as determined by REA for farm consumers and 96 percent of such average for town residential consumers.



a/ (cont'd)

Average consumption of all farm consumers was 77 percent of that for the sample group of farms and average consumption of all town residents was 90 percent of average for sample group of town residents.

FACTORS WHICH TEND TO SUPPORT CONSERVATIVE  
INDICATIONS OF RESPONDENTS

1. Farmers in the area have now had nearly three consecutive years of drought. Although the effects of the drought to date were somewhat cushioned by previously accumulated reserves, a further continuance of the drought would seriously curtail kwh consumption.
2. There is in the area a rather high usage of gas for cooking and water heating. Indications are that such usage will continue in the future. The cost of gas is competitive with cost of electricity. The previous appraisal (1947) indicated that natural gas was available in the area at from 15 to 24 cents per 1,000 cubic feet and that butane was delivered for 7 cents per gallon and propane at 8 cents per gallon.

FACTORS WHICH TEND TO SUPPORT HIGHER THAN  
INDICATED FUTURE KWH ESTIMATES

1. Trends in farm kwh consumption indicate a somewhat higher kwh consumption than indicated by respondents' plans to add electrical equipment. The most recent trends based on the first two months of 1954 indicate average farm kwh consumption will be at or above the level previously estimated for that year (235 kwh).
2. In spite of the drought the farmers in the area are apparently still in a good financial position as reflected by their continued increase in electric usage in the immediate past. Cessation of drought might bring about still greater increases in farm kwh usage.
3. The appraiser stated that farm respondents may have been influenced by the economic conditions of the recent drought years in making replies to questions relative to the purchase of appliances in the next three years. A comparison of consumption by the end of 1956 (242 kwh) indicated by respondents with current trends of usage would lend support to such a belief.









